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10/718,143

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EXAMINER

SINKANTARAKORN, PAWARIS

ART UNIT

PAPER NUMBER

2616

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/718,143

Applicant(s)

GAVILLERO MARTIN ET AL.

Examiner

Pao Sinkantarakorn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,7-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 2-6,11 and 13-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Drawings***

2. The drawings are objected to because none of the parts in Fig. 1, 2, 3, and 7 is labeled with descriptive label. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

### ***Claim Objections***

4. Claims 1-18 are objected to because of the following informalities:

Regarding claim 1 line 4, the recitation "a head-end a various users" should be rewritten as ---a head-end and various user equipments---.

Regarding claim 1 lines 15 and 19, it is suggested to remove "(16)" and "(7)" because they are not considered positive claimed limitations.

Claims 2-18 are then objected because they depend on claim 1.

5. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 7-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidl et al. (US 5,732,113) in view of Jones et al. (US 6,876,675).

**Regarding claim 1**, Schmidl et al. disclose a process for synchronization in the downstream of multiple users in a point to multipoint system with OFDM modulation (see column 11 lines 32-34, the broadcast of digital TV using OFDM signals), applicable

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to two-way communication over the electricity network between a head-end and various users which comprises the sending of synchronization sequences in the information sent via the downstream channel which runs from the head-end to the users, to provide synchronization in frequency and time in reception (see column 11 lines 60-67, OFDM training sequence included in the OFDM signal is transmitted to a receiver within a data frame to provide timing and frequency synchronization), and characterized in that the process comprises the generation of synchronization sequences by means of two identical symbols (see column 14 lines 12-21, first OFDM training symbol has two identical halves, which is considered to be two identical mini-symbols) periodically transmitted from the head-end equipment by the downstream channel to all the user equipments (see column 12 lines 17-18, 30-31, the training sequence appear at the beginning of every frame, which is considered periodically) which detect the synchronization sequences in reception (see column 14 lines 27-31, a receiver receives the training sequence and is enabled to synchronize to the symbol timing of an OFDM signal) and selectively estimate and correct the sampling frequency (see column 19 lines 51-61) in the analog/digital converters that are included in the receivers in the user equipments (see column 20 lines 60-67, after synchronizing apparatus obtains the estimation and correction values from the computing means, it can send a control signal to local oscillator to synchronize time and frequency of ADC).

However, Schmidl et al. do not disclose a means for adding and extracting a cyclic prefix to the OFDM symbols, including interpolators and decimators in the transmission and reception systems of the equipments and digital band translation.

The invention of Jones et al. from the same or similar fields of endeavor disclose an OFDM system including a means for adding and extracting a cyclic prefix to the OFDM symbols (see column 3 lines 32-36, cyclic prefix addition block), including interpolators (see column 3 lines 46-48, digital filtering stage rejects interpolation images, which operates as an interpolator) and decimators (see column 4 lines 3-5, digital filter rejects any decimation images, which operates as a decimator) in the transmission and reception systems of the equipments and digital band translation (see column 3 lines 49-50, DAC converts the digital baseband signal to analog).

Thus, it would have been obvious to the person of ordinary skill in the art to implement the OFDM system as taught by Jones et al. to the time and frequency synchronizing apparatus in OFDM system of Schmidl et al.

The motivation for implementing the OFDM system as taught by Jones et al. is that it increases efficiency of the OFDM system.

**Regarding claim 7**, Schmidl et al. further disclose a process, characterized in that the two identical synchronization symbols are selectively constituted for fixed or pseudorandom information (see column 13 lines 11-14);

**regarding claim 8**, characterized in that synchronization of the sampling frequency and synchronization of time in the receivers comprise an acquisition stage and a tracking stage, where the acquisition stage includes a search for a determined number of synchronization sequences (see column 14 lines 31-35, the timing synchronization is done by evaluating the samples of first OFDM training symbol (2 mini symbols)), a rough frequency error correction (see column 20 lines 60-67, re-aligning

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the oscillation frequency in order to remove the carrier frequency offset) and the move to the tracking stage for both synchronizations (see column 21 line 1);

**regarding claim 9**, characterized in that the acquisition stage for the time synchronization comprises a waiting stage to detect a synchronization sequence with a determined number of symbols or synchronization sequences in the position (see column 12 lines 32-35), moments, expected, before moving on to the tracking stage to reduce the probability of acquisition of synchronization due to a false alarm (see column 12 lines 35-38);

**regarding claim 10**, characterized in that following the acquisition of the time synchronization the process comprises a follow up stage for the time synchronization which consists of detecting the synchronization sequences sent by the downstream channel to the users, keeping account of the number of sequences not received, where in case a certain established limit is surpassed causes the process to return to the time acquisition stage (see column 12 lines 28-38, the OFDM receiver waits until it detects an OFDM training sequence).

**Regarding claim 12**, Schmidl et al. disclose all the subject matter of the claimed invention except the process, characterized in that the frequency synchronization acquisition is suppressed in the case where the oscillator, which is used to provide the sampling frequency in the analog/digital converter of the receiver, is sufficiently precise. However, it is well known in the art to suppress the synchronization acquisition when the oscillator is sufficiently precise.



Thus, it would have been obvious to the person of ordinary skill in the art to implement a process, characterized in that the frequency synchronization acquisition is suppressed in the case where the oscillator, which is used to provide the sampling frequency in the analog/digital converter of the receiver, is sufficiently precise.

The motivation for implementing a process, characterized in that the frequency synchronization acquisition is suppressed in the case where the oscillator, which is used to provide the sampling frequency in the analog/digital converter of the receiver, is sufficiently precise is that it reduces the delay of the OFDM system.

### ***Allowable Subject Matter***

10. Claims 2-6, 11, and 13-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hadad (US 6,985,432) and Belotserkovsky et al. (US 6,628,735) are considered pertinent to the claimed invention.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pao Sinkantarakorn whose telephone number is 571-270-1424. The examiner can normally be reached on Monday-Thursday 9:00am-3:00pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS

A handwritten signature in black ink, appearing to be "Ricky Ngo", written over the "PS" text.A handwritten signature in black ink, appearing to be "Ricky Q. Ngo", written above the printed name.

RICKY Q. NGO  
SUPERVISORY PATENT EXAMINER